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RECORD OF GEOGRAPHICAL PROGRESS.

AMERICA.

TOPOGRAPHIC SURVEY OF NEW YORK.—The topographic survey and mapping of New York State is making fair progress. The State is co-operating with the United States Geological Survey in producing this map, and thus far seventy-three of the atlas sheets have been published. The sheets cover almost all of the eastern tier of counties, but only the Brooklyn sheet of Long Island is yet ready. The survey has also been extended through most of the Mohawk valley and to Niagara Falls, with a break in Wayne and Cayuga counties. The Ithaca, Elmira and Olean sheets are all that are yet issued for the south-central and south-western parts of the State. The sheets now ready for the public cover a little more than a third of the total area.

THE TRANS-ANDINE RAILROAD.—At least three German maps of 1898 show the trans-continental railroad between Buenos Aires and Valparaiso as though it were completed. It is not yet completed, however, and is not likely to be for some years to come. According to Mr. E. A. Fitz Gerald, the road has been advanced on the Chilian side of the Andes up to the mountains and on the Argentine side some distance into them; but in March last, forty-four miles of the most difficult part of the road remained to be built and further progress will necessarily be very slow. The part yet to built includes a tunnel under the Cumbre Pass, the summit of which is 12,795 feet above the sea. The road through the mountains is $3\frac{1}{2}$ feet gauge, with rack and pinion for the steeper grades. Even greater difficulties are involved than had to be overcome in building the lines into the Peruvian mountains. Trains are now running as far as Punta de las Vacas in the Argentine mountains and to Salto del Soldado on the Chilian side.

ASIA.

RAILROADS IN CHINA.—About 360 miles of railroad are now in operation in China. The road from Tientsin, the port of Pekin, to Mongolia now extends from Tong-ku, at the mouth of the Peiho, north-east to Shan-hai-kwan, where it crosses the Great Wall of China, penetrates thirty miles further north into the edge of Mongolia and is still building. The part of the line now in operation is

210 miles long. To the north of Tientsin extends the road, 80 miles long to Pekin, which has been carrying passengers and freight for over a year. It is doing an excellent business, is already one of the most profitable short railroads in the world and its capacity is being increased by the laying of another track. The first section of the important railroad which is to extend from Pekin to Hankau has been completed from the capital as far as Paoting-fu, about eighty miles. This completes the list of lines in operation. They are all owned by the Government and were constructed by Chinese labor under the direction of English engineers. The cars are of the American type and the locomotives on the Pekin and the Paoting road came from this country. Among the projected lines the most important at present is the Eastern Chinese Railroad, which Russia secured permission to build across Mongolia from the Trans-Siberian railroad to Vladivostock. It will be about 800 miles long, and expensive to build because that part of the country is very rugged. The surveys are far advanced and the road will be completed in a few years. The railroad now in operation beyond Shanghai-kwan will be extended to meet this road.

THE ROUTE TO PEKIN.—Major A. C. Tate describes (*Scot. Geog. Mag.*, Dec., 1888) the present method of getting to Pekin. Shanghai is the starting place for passengers bound there. The journey may be made from Yokohama, but the Japanese vessels stop at ports of Corea and the journey takes ten days and is not popular among passengers, for that reason and also because the boats are all freighters and do not give comfortable accommodations to tourists. The Shanghai vessels advertise to sail for Tientsin on certain days, but do not start until they are full of cargo, which may be one to three days after the advertised time. Three companies engage in the Shanghai-Tientsin trade. Their vessels are all cargo boats, the passengers being merely incidentals. The vessels stop at Chifu on the Gulf of Pechili to discharge cargo and, if a strong north-easter is blowing, this work may be delayed. It takes anywhere from three days to a week to reach Tientsin. As the mouth of the Peiho has been so impeded with silt for three years that vessels of considerable draught cannot enter it, freight is discharged on lighters which are towed up to Tientsin and passengers are taken off on a tug to the train that carries them to Tientsin. By paying double first-class fare European passengers have the privilege of travelling on the mail train to Pekin. No Chinese passengers either of high or low degree are carried on this train. The mail train covers the distance

between Tientsin and Peking, 80 miles, in four hours if it runs on schedule time, which it often fails to do. The Peking terminus is four miles from the city and this last stage of the journey is made in a car over one of the worst roads imaginable.

AFRICA.

WHITE POTATOES IN AFRICA.—*Le Mouvement Géographique* says that some years ago a few bags of white potatoes were sent from the Canary Islands to Matadi on the lower Congo. M. Paternot was just starting for the far upper Congo, 1,800 miles from Matadi, and he put four of these potatoes in his baggage. He excited the hilarity of his friends when he told them he was going to raise the much-prized tuber in Central Africa. When he reached Wabundu, on one of the Congo's head-streams, he planted his potatoes. Fifteen months later they already had an abundant posterity. Four harvests have been gathered. Many of the tubers were large, and grew from six to a dozen in a hill. At last accounts, Paternot's potato patch covered several acres, and he had sent plenty of seed to Tanganyika and other points for starting other potato farms. M. Emile Laurent, professor in a Belgian school of agriculture, who has returned from the Congo, is authority for the statement that the potatoes raised by M. Paternot are a little more watery than European potatoes, but not so much so as to impair their quality to an important degree. These potatoes are raised in the most elevated part of the Congo basin, and probably would not thrive at lower altitudes.

EXTERMINATING THE AFRICAN ELEPHANT.—The famous French composer, Camille Saint-Saëns, recently wrote a letter to the chairman of a meeting, held in Paris, to consider means for the protection of the African elephant. In this letter, he said:

"These animals, indispensable to real African civilization, are being rapidly exterminated for the sole purpose of enriching a few persons, who care for nothing except to put money in their pockets. All this slaughter to make billiard-balls and paper-cutters!"

He urged the need of appealing to the French authorities to protect the elephant in the French Congo and the Congo Free State. The desire to preserve this noble animal from extermination cannot be too heartily applauded, but at the same time the appeal of M. Saint-Saëns does not seem to be based upon an exact knowledge of the situation. The statistics of the Antwerp ivory market, now the greatest ivory market of the world, show that

fully three-fourths of the ivory now coming to Europe is what is known as dead ivory; in other words, the tusks, which have been accumulating in the hands of the natives for scores of years. Live ivory, or the tusks of freshly killed animals, furnishes only a comparatively small part of the supply, and it is not accurate to say that an enormous number of elephants are now being killed for their ivory. No doubt, white hunters in Africa kill elephants whenever they have a chance, but the highly prized opportunity is not of frequent occurrence. Dr. Donaldson Smith, a keen sportsman, killed only six elephants during his year and a half in the unhunted plains of Gallaland. It is, indeed, true that the elephant is disappearing before the progress of territorial occupation, but this is always true of all large game. Fifty years ago, the Transvaal was one of the great game countries, but it has now completely lost its most distinctive zoological features. Its tens of thousands of antelopes, rhinoceroses and leopards have all disappeared. The African elephant has also retreated before the advance of the white man to the north of the Zambezi, just as in India he has practically deserted the peninsula and taken to the Himalaya foothills. The Germans are already beginning to regulate the chase of the elephant in East Africa with a view to his preservation, and there is, as yet, no reason for believing that elephants are becoming fewer in the Congo basin.

TRANSPORTATION ON THE UPPER CONGO.—*Le Mouvement Géographique* says that early in January a tugboat and two barges were shipped from Antwerp in sections, and will be put together at Stanley Pool. The tugboat is 80 feet long and draws $3\frac{1}{2}$ feet. The barges are of steel, 175 feet long, 20 feet wide, and gauge 500 tons each. They are to bring ivory, rubber, coffee, cacao, copal, and other products from the factories and plantations of the upper river to the railroad. The tug, with both barges in tow, will make six round trips a year from the Pool to Stanley Falls on the Congo, or to Lusambo on the Sankuru affluent. They will carry annually about 6,000 tons of products about 1,000 miles down the river. It is expected that in the coming season about 15,000 tons of the products of the upper Congo will be brought down the river and shipped to Antwerp, Havre, Liverpool and Hamburg. Before the building of the railroad it would have cost \$250 to carry each ton on the backs of men 235 miles around the Congo cataracts.

POLAR REGIONS.

THE ANDRÉE SEARCH EXPEDITION.—Herr Stadling, command-

ing the Andrée Search Expedition, reports the details of his proceedings down to November 29th, 1898.

Writing from Balkur, in the Lena delta, Herr Stadling announces that valuable botanical collections have been obtained by Dr. Nilson. He is also of the opinion that if a railway from the upper Lena to the great Siberian railway be constructed, it would develop a trade in the supplying of fish to the industrial and mining districts to the south.

No trace of Andrée or his balloon had been discovered.

MR. BORCHGREVINK'S EXPEDITION.—A telegram from Hobart, Tasmania, of December 19th, announces the departure for the south of the *Southern Cross*, with Mr. Borchgrevink's Antarctic Expedition.

GENERAL.

MEASURING A DEGREE OF LATITUDE IN SPITZBERGEN.—A Swedish-Russian expedition selected in Spitzbergen, last summer, the region where the measurement of a degree of latitude is to be carried out, and chose sites for the stations to be occupied during the observations. At a meeting in Stockholm in December last, it was decided to make a measurement next year, and the expedition will spend the winter of 1899-1900 in Spitzbergen. Astronomical observation being involved in the work, it is necessary, in the polar regions, to carry on operations in the late fall, winter or early spring, when the stars are visible. The fact is generally known, of course, that the object of such work as this is to obtain additional data for a more exact determination of the shape of the earth. French measurements in the last century in Lapland, France and Equatorial South America, demonstrated the slight lengthening of degrees of latitude, as distance is attained from the Equator, and thus proved incontestably that the earth is not spherical in form. It is, however, only by the combination of a large number of observations, and the comparison of many astronomical with geodetic results, that it is hoped to eliminate error as far as possible from the determination of the shape of the earth. All the preliminary arrangements for the Spitzbergen expedition have been completed. The scene of its work is far north of the places of similar measurements thus far accomplished.

WAKE ISLAND.—The second Philippines expedition landed on July 4 last on the isolated little rock in the Pacific, Wake Island, 19° 25' N. Lat., 166° 25' E. Long., and the Government has since

directed the formal taking possession of the island. Wake Island was discovered by the Spanish sailor Mendaña in 1568, when he was sailing northeast from the Solomon group. We are indebted to the Germans for the only map yet published, which shows what the three little islands, of which Wake Island is the largest, really are. Most maps merely indicate their position by a dot. The map is by Mr. R. Kausch, who, it is said, procured his material from the crew of the German bark *Libelle*, which was wrecked on the reef of the east coast of Wake Island in 1866. The map is reproduced by Mr. Paul Langhans in his "Deutscher Kolonial-Atlas." This map shows two peninsulas branching from the main body of the island, one extending north-northwest and the other northwest. From the head of the island to the end of the longer peninsula the distance is about six miles, and to the end of the short peninsula about five miles. The main body of the island is about three miles long and two miles wide at its broadest part. The peninsulas are each about a mile wide, narrowing towards the ends; and beyond each end is an unnamed island, one two miles long and the other a little shorter. The entire group is surrounded by a coral reef. In the water enclosed by the reef and peninsulas there is a depth of $26\frac{1}{4}$ feet, which shallows towards the south; and outside the reef there is anchorage in about 200 feet of water. A straight line between the island of Hawaii and Wake Island, if projected further west, passes about 200 miles to the north of the Philippines. There is no doubt of the availability of this uninhabited group either for a coal-ing or a cable station.

A LETTER FROM M. LOUIS VOSSION, French Consul at Honolulu, appears in the *Comptes Rendus* of the Paris Geographical Society, for Aug.-Nov., 1898, pp. 372-375.

M. Vossion writes that on the 23d of May he was told that a Tahitian vessel had arrived in distress at Hookena, South Kona District, Hawaii. As soon as the vessel reached Honolulu the Consul went on board and heard the following story:

The vessel, a schooner of 32 tons, was the *Tetautua*. She left Papeete on the 26th of February, with eight persons on board—the captain, four sailors, the supercargo, and two passengers (man and wife). The passengers were to be landed at Penrhyn (Tongarewa) island. On the 2d of March a storm destroyed the compass and drove the vessel out of her course, and for eighty-one days she drifted. Food was abundant, but the water gave out. There were frequent rains, however, and water enough was caught in sails; but the people were worn out when they finally reached Hawaii.

The Consul adds that this modern instance confirms the well-

known traditions of the Hawaiians, and brings up the question of air and ocean currents between the Society group and the Hawaiian Islands.

He refers to a paper on the Currents of the Pacific read in July last, at Sydney, by Capt. Hepworth, of the steamer *Aorangi*, belonging to the Canadian-Australian line. According to his experience, the currents vary with the season. He constructed, from thousands of observations made in 64 voyages (between Sydney and Vancouver, by Wellington, N. Z., and the Fiji Islands), twelve charts of the ocean currents, one for each month of the year, and each chart shows important variations.

COALING STATIONS.—Steamships carry three-fourths of the world's commerce, and this carrying power and all the power used by nations for the defense of commerce depends upon coal. This is the reason Great Britain has secured so many coaling stations along all the great trade routes. Coal may be bought by any naval vessel and the merchant marine in time of peace at most of the ports of the world, but not at all of them. It is kept as a commodity at 231 ports of the world outside of Europe, where every port is a coal depot. According to Perthes's Sea-Atlas, outside of Europe, coal is specially kept for sale to steamers at eight ports of the north coast of Africa; thirteen ports of West Africa; fourteen ports on the Gulf of Mexico and Caribbean Sea; twenty-four ports of the West Indies; twenty-two Atlantic ports of North America; five Atlantic islands; nine ports of East Africa; eighteen ports of South Asia; six islands of the Indian Ocean; twenty-six ports of the East Indies and Philippines; fourteen ports of the East Asian coast; five ports of Japan, Sakhalin and Kamchatka; ten ports of Australia; seven ports of New Zealand; nineteen ports of the West coast of North America; ten ports on the west of South America; Honolulu and Hilo in the north Pacific; and at four islands in the South Pacific.

DEFINITIONS OF ISOTHERMS.—American text books of geography all give practically the same definition of isotherms, *i. e.* that they are lines drawn through places having an equal average of temperature. This definition is a part but not the whole of the truth, and most boys and girls leave school with a misconception as to what an isotherm is, and they rarely find out in later years. They all know that latitude and altitude are the main factors in determining the mean temperature of a place, but they do not know that isothermic maps take into account only one of these elements, and that is lati-

tude. They eliminate the influence of altitude. The isotherm passing over the top of Pike's Peak does not show the mean temperature at the summit of the mountain, but what the mean temperature would be in that immediate neighborhood if the land instead of rising high above the sea stood at the level of Coney Island.

The reason may be easily explained. Most of the inhabited land does not rise so high above the sea that the temperature is greatly affected by altitude. The effects on temperature of both altitude and latitude cannot well be shown on one map; and isothermic maps were devised to show the effects of latitude and some other elements, such as position near the sea or in the far interior. An isothermic line, therefore, does not show the actual mean temperature of a place on it unless that place is at sea level. But it is easy to deduce from the isotherm the actual mean temperature of the place if we know its elevation above the sea. How this is done is very clearly explained by Dr. H. R. Mill, as follows:

“The air grows cooler by 1° F. for every 270 feet of elevation above sea level, but isothermic lines show the sea level temperature. In using isothermic maps we must therefore remember that places 600 feet above the sea level have a temperature 2° lower than the isotherms indicate; places 6,000 feet above the sea 22° lower; those 12,000 feet above the sea 45° lower, and the mountain slopes 18,000 feet above the sea no less than 66° lower than the sea level temperature shown by the isotherms. This accounts for the fact that none of the important towns in the temperate zones is situated more than 2,000 feet above the sea, while in the tropics they are built at as great elevations as 8,000 or 10,000 feet.”

Weather charts are an exception to this rule. They record the actual thermometrical readings at the points of observation.—(Condensed from the *New York Sun*, Jan. 1, 1899).

DEATH OF GEN. ANNENKOFF.—Gen. Annenkoff died in Russia on Jan. 24. He will be remembered as the builder of the first railroad through hundreds of miles of sand waste when the project for connecting the Caspian with the upper Oxus was carried out. He succeeded Gen. Tcherniaeff in charge of this enterprise. The latter had condemned the undertaking, declaring that the road could not be built without enclosing the track by a wall so high that drifting sand could not bury it. Annenkoff solved the problem of drifting sand by planting along the track hundreds of thousands of desert shrubs whose roots and branches helped to keep the sand in place; by sewing grass seed along stretches of the track where it was possible

to pipe water and irrigate the surface adjacent to the roadbed; and by strengthening his embankments with the branches of desert shrubs placed in layers throughout the heaped-up earth, and covering their sides with layers of clay. He solved the water problem by piping it to the track from the mountains of northern Persia and the Murghab and Tejend rivers, and beyond Merv he relied upon subterranean supplies. Along parts of the road it may always be necessary to fight sand with a force of shovellers as is done today, but Annenkoff reduced the problem to manageable compass. His plans for building the Trans-Siberian railroad are those which are now being carried out, and in recent years he largely shaped and directed this great enterprise.